

## Measurements of Density and Structure of Alloys Liquids by Levitation Technique

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A method of accurately measuring the densities of high-temperature liquids by electromagnetic levitation (EML) within static magnetic fields is proposed. The method is based on the electromagnetic effect on the moving electrical conductive materials. The liquid metal sample levitated by this EML technique is oscillating due to the electromagnetic force, and also is moving in the coils. For the liquid metal samples, if we apply a static magnetic field, the Lorentz force by the interaction between the liquid metals and the static magnetic fields reduces the surface oscillation and translational motion of samples. Using this effect, we can precisely obtain the correct volume of levitated liquid samples like a solid body. Using the technique, we measured the density of high-temperature liquid of various Si-based alloys in the temperature range from 700 to 2400 K. We reduced uncertainty an order of magnitude compared with previously reported data by this technique. From the accurate density data, we discuss the structure of liquid alloys from the viewpoint of atomic interactions in the liquid phases.